

Abstract

Fuel Cell System Having Inlet Fuel To More than One and/or Recycle To Less Than All of the Fuel Fields

Fuel cell power plants (19, 47, 60, 86, 102, 112, 121) include recycle fuel from a fuel exit (29) of the last fuel flow field (23, 52, 64, 89) of a series of flow fields (20-23; 49-52; 61-64; 87-89) labeled M - N through M, applied either to the Mth flow fields or both the Mth and the (M-1)th flow fields. The fuel recycle impeller is a blower (30), a turbocompressor (30a) driven by an air exhaust, an ejector (30b) or an electrochemical hydrogen pump (30c). Fuel from a source (77) may be applied both to the first fuel flow field (87) and an additional fuel flow field (88, 74, 75, 89) of a series of flow fields to reduce pressure drop and flow rate requirements in the first of the series of flow fields and assure more fuel in the additional fuel flow field. Flow to the additional fuel flow field may be controlled by voltage (126) in such field or fuel content (128) of its exhaust. Transient fuel volume is provided by a tank (125).